

ANNUAL REPORT
to the
GOVERNOR and GENERAL ASSEMBLY
on the
SOLID WASTE MANAGEMENT ACT OF 1991
Fiscal Year 2004-2005



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Abbreviations

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| APR | Annual Progress Report |
| CIRMD | Communications, Information, & Resources Management Division |
| CIS | Center for Industrial Services |
| CTAS | County Technical Assistance Service |
| EPA | Environmental Protection Agency |
| FY | Fiscal Year |
| HHW | Household Hazardous Waste |
| MSW | Municipal Solid Waste |
| OSW | Office of Solid Waste |
| RMCT | Recycling Marketing Cooperative for Tennessee |
| RMD | Recycling Markets Directory |
| SC3 | School Chemical Cleanout Campaign |
| SERP | State Employee Recycling Program |
| SWM | Division of Solid Waste Management |
| SWMA | Solid Waste Management Act of 1991 |
| SWMS | Solid Waste Management System |
| TCA | Tennessee Code Annotated |
| TDEC | Tennessee Department of Environment and Conservation |
| TDF | Tire-Derived Fuel |
| TGAC | Tennessee Great American Cleanup |
| TME | Tennessee Materials Exchange |
| TN-SWEP | Tennessee Solid Waste Education Project |
| TVA | Tennessee Valley Authority |
| US | United States |
| UT | University of Tennessee |
| WTP | Waste Tire Program |

Abstract

The Tennessee General Assembly endorses effective and efficient solid waste management through various laws. The Tennessee Solid Waste Management System (SWMS) provides technical assistance and education to local officials, educators and citizens, and promotes waste diversion and resource recovery. The Solid Waste Management Fund provides financial support for collaborative efforts among the educational institutions, private organizations, and agencies at all levels of government. The goal of SWMS is to integrate safe, effective, and ecologically sound management of solid waste into the everyday activities of Tennesseans. Through SWMS, we sponsor educational outreach activities in an effort to educate, provide technical assistance to local governments and industries regarding waste management and recycling, and fund remediation of historical disposal sites. The partnerships formed through SWMS serve to promote responsible waste management, and protect human health and the environment in Tennessee.

Introduction

The Solid Waste Management Act of 1991 (the Act) requires an annual report to be made on Tennessee's Solid Waste Management System (SWMS). The Department of Environment and Conservation (TDEC) Division of Solid Waste Management (SWM) and Office of Environmental Assistance have collaborated to produce this 2004-2005 Tennessee Solid Waste Management Annual Report. This document is submitted to the Governor and General Assembly as required by Tennessee Code Annotated (TCA) §68-211-873.

Tennessee's SWMS is intended to further the protection of public health and enhance the quality of the environment. Through the SWMS, TDEC acts as a facilitator for waste reduction by collaborating with county and municipal governments, industry and contract agencies. The goal is to coordinate the activities of these groups to maintain adequate health and safety standards, protect the environment through facility design and location, and maximize the utilization of resources that would otherwise be disposed at solid waste facilities (Solid Waste Management Act, Public Policy, 1991).

Background

Concern for solid waste issues has been prevalent since the United States Congress enacted the Solid Waste Disposal Act of 1965. During the 1980s, public interest in solid waste management rose to new levels because of shrinking landfill capacity, increasing disposal costs, and opposition to the siting of new landfills. To address this, the Federal government enacted the Resource Conservation and Recovery Act. Subtitle D of this law provides regulatory exemptions and other incentives that encourage the reuse of recoverable material (United States

Environmental Protection Agency, Office of Solid Waste, Communications, Information, & Resources Management Division [US EPA OSW CIRMD], 1998, p. II-1).

Coincidentally, in the late 1980s, local governments in Tennessee were faced with the expensive and often controversial challenge of finding environmentally safe disposal capacity for municipal solid waste. Lawmakers, public administrators, technical assistance providers, and industry collaborated to find a solution. The consensus was that long-range planning was essential for local governments to meet State and Federal mandates regarding modern, safe municipal solid waste disposal. The Act, a direct result of these discussions, placed as one of its major roles development of tools to help local governments, industry, and the public make better choices in dealing with solid waste issues (US EPA OSW CIRMD, 1998, p. II-2).

By 1995, the Environmental Protection Agency (EPA) had developed an integrated, hierarchical approach to waste management (US EPA OSW CIRMD, 1998, p. II-3). This was known as the “Integrated Solid Waste Management System.” To mirror the waste management system established by EPA, TDEC developed its own SWMS. Tennessee’s SWMS is intended to facilitate regulatory activities and enforcement of TDEC. The Act challenged each Region to reduce the amount of solid waste disposed in Class I landfills and incinerators by 25%. Originally, the Act set 1989 as the base year for calculation of the 25% solid waste reduction goal and December 31, 1995, was set as the date to meet the reduction goal (Solid Waste Management Act, Plan for Disposal Capacity & Waste Reduction, 1991).

The Act set forth specific provisions to further this waste reduction goal. One provision was the establishment of the Solid Waste Management Fund (the Fund). The Fund was established to provide financial support in addressing waste avoidance, waste reduction,

recycling, composting, and household hazardous waste disposal. As identified by the General Assembly, education, technical assistance, and economic incentives are the tools to be used in support of this mission (Solid Waste Management Act, Solid Waste Management Fund, 1991).

Monies for the Fund are generated from a \$0.75 surcharge assessed on every ton of municipal solid waste disposed in Tennessee's Class I landfills or incinerators. The Fund exists to support solid waste planning and reduction activities and solid waste education. In 2004, amendments to the Act extended the surcharge through June 30, 2008. In addition to the disposal surcharge, retail tire dealers collect a \$1.00 pre-disposal fee for each new tire sold in Tennessee. Tire dealers keep 10 cents of each dollar to cover administrative costs. The remainder is remitted to the Department of Revenue to be deposited into the Fund (Solid Waste Management Act, Expenditure of Revenues, 1991).

The Act was amended in 1999 and established December 31, 2003, as the date for Municipal Solid Waste (MSW) Regions (solid waste planning entities) to meet the 25% per capita (by weight) reduction and diversion goal for municipal solid waste disposed in Class I landfills or incinerators. The 1999 amendment established 1995 as the new base year (Solid Waste Management Act, Solid Waste Reduction & Diversion Goal, 1991). Additionally, the 1999 amendment allowed for the economic growth of a Region to be used as one factor in determining compliance with the 2003 goal (Solid Waste Management Act, Basis for Goal, 1991). Each Region that did not meet the December 31, 2003, deadline is required to have its solid waste program qualitatively assessed to determine if a "good faith" effort was made toward achieving the goal. TDEC has drafted rules specifying the methodology to be used for the qualitative

assessment of regional solid waste programs. These rules will be fully promulgated August 6, 2006.

Solid Waste Management System

The SWMS is a three-pronged approach to better manage Tennessee's solid waste. This includes providing and promoting technical assistance, education, and diversion / resource recovery. These activities are advanced through the collaborative efforts among TDEC, educational institutions, private organizations, and agencies at all levels of government.

To assist the implementation of the SWMS, the Act made each county a Solid Waste Planning District (Solid Waste Management Act, Municipal Solid Waste Planning District, 1991). The Districts, in turn, were allowed to collaborate with local municipalities and neighboring counties to form MSW Regions (Solid Waste Management Act, Municipal Solid Waste Regions, 1991). The Act requires each MSW Region to develop a 10-year disposal plan for their solid waste, provide for solid waste education to its population, and plan to reduce the amount of waste it generates by 25% (Solid Waste Management Act, Municipal Solid Waste Region Plans, 1991).

Along with the 10-year plans, Regions must prepare 5-year updates and Annual Progress Reports (APRs) that project foreseeable solid waste disposal requirements and proposed solutions. Sixty-six Regional Planning Boards have the responsibility for developing the plans and for reporting this information to TDEC. The legislature amended the Act in 2004 to allow the APR to be used in lieu of the Regional 5-year capacity update. Each Region now uses its APR to project changes in solid waste generation and to modify its 10-year plan (Solid Waste Management Act, Municipal Solid Waste Region Plans, 1991).

To implement the SWMS, TDEC disperses monies from the Fund in the form of grants and contracted services. Grants are given to local governments, educational institutions, MSW Regions, and development districts to aid in solid waste planning. Grants are also available to county and local governments to assist in solid waste facility upgrades, purchase of recycling equipment, recycling of waste tires and collection of household hazardous waste at permanent facilities. Included below are programs sponsored by the Fund in implementing the SWMS.

Diversion / Resource Recovery

Household Hazardous Waste

Improper storage and disposal of household hazardous waste (HHW) poses a threat to employees of the waste industry, the environment, and public health. The HHW Mobile Collection Service offers the public an alternative to sending such waste to inadequately designed disposal facilities or otherwise releasing it to the environment. The HHW program provides for convenient HHW collection and disposal at no charge to households. “Tennessee's Mobile Collection Service has been in operation since 1993. Since then, there have been over 400 one-day collections. Over 100,000 Tennessee families have brought in almost 6 million pounds of household hazardous waste for proper disposal” (TDEC SWM HHW Program, (n.d.), ¶ 6). Ninety-two counties have participated in the HHW Mobile Collection Service since the program began.

State Parks Recycling

With the technical and financial assistance from the State Employee Recycling Program (SERP), recycling initiatives have been established at various State parks. Individual parks implement their recycling program through partnerships among the parks, SERP, and local solid

waste organizations. State parks collect paper, aluminum, steel, cardboard, as well as #1 and #2 plastic. Park marinas collect used oil, plastic, and aluminum.

Waste Tire Management

In 1999, the Act was amended to prohibit counties from placing shredded tires in landfills after July 1, 2002, if the net cost of shredding, transporting, and disposing of waste tires exceeded the cost of an available beneficial end use (Solid Waste Management Act, Whole, Unshredded Tires, 1991). Beneficial end uses for scrap tires include cement manufacturing, tire-derived fuel (TDF), and civil engineering applications. FY 01-02 was the last year that a statewide shredding service was provided to counties. All 95 Tennessee counties now send their tires to beneficial end users.

TDEC also maintains a list of unpermitted waste tire disposal sites. This list is prioritized to identify those sites that may pose a threat to human health. For instance, rainwater trapped in tires can become a breeding area for mosquitoes. As the public's concern for West Nile virus is increasing, the closure of these disposal sites has become a priority, particularly at those sites within close proximity to human habitation.

Education

America Recycles

America Recycles is a non-profit organization that encourages Americans to recycle and to purchase recycled goods. This organization uses November 15 each year to draw nationwide attention to recycling (America Recycles, 2005, *About ARD pushing recycling since 1997*, ¶ 1). TDEC joins state agencies from 11 other states and industry organizations from 46 states, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the

Northern Mariana Islands in coordinating America Recycles Day (America Recycles, 2005, *Who to contact*, ¶ 1).

Schools Chemical Cleanout Campaign

The Schools Chemical Cleanout Campaign (SC3) is a cooperative effort between TDEC and Department of Education. The program assists K-12 educational institutions with removal and disposal of potentially hazardous substances. These chemicals are typically old laboratory materials. Under EPA's Green Schools Program, TDEC has been granted funding for the SC3 program for a two-year period. The funding period is set to conclude September 2006. The management team is composed of technical staff from SWM and TDEC's Green Schools program. The primary goals are to inventory and remove potentially dangerous legacy chemicals from schools; to conduct follow-up educational workshops for teachers on proper chemical safety, regulations, and disposal; and to avoid future needs for a disposal program by encouraging Green Chemistry, which uses less hazardous substances. SC3 receives support from the Tennessee Organization of School Superintendents, Tennessee Science Teachers Association, and the Tennessee Academy of Science (US EPA, Region 4, School Chemical Cleanout Campaign, 2006, *School cleanup in Tennessee*, ¶ 1).

State Employee Recycling Program

Through SERP, TDEC attempts to lead by example, encouraging organizations across Tennessee to adopt similar waste prevention and recycling programs. State employees believe in recycling as a way of life, and demonstrate it in their efforts to reduce, reuse, and recycle. Local recycling programs assist with statewide implementation of SERP in Chattanooga, Johnson City, Knoxville, Nashville, Cookeville, Columbia, Jamestown, and Oak Ridge. This allows more than

28,300 state employees in 122 facilities to participate in the program. Revenues received from the SERP are deposited in the Fund.

Tennessee Great American Cleanup

TDEC participates in the Tennessee Great American Cleanup (TGAC), sponsored by Keep Tennessee Beautiful. The event is part of a nationwide program involving nearly 2.5 million volunteers. The program runs from March 1 to May 31 every year. The mission of the program is to empower individuals to enhance their community environment (Keep Tennessee Beautiful, 2006, p. 4).

Tennessee Solid Waste Education Project

Since 1995, the Tennessee Solid Waste Education Project (TN-SWEP) has provided consulting services, education materials, and training for K-12 teachers and students statewide. The staff coordinates TN-SWEP services with TDEC's Green Schools program, and discusses opportunities and needs for incorporating activities relating to the solid waste component of the Tennessee Pollution Prevention Partnership.

Technical Assistance

Development Districts

In 1965, The General Assembly empowered the Department of Economic and Community Development to divide Tennessee into economic Development Districts (Development District Act of 1965, Creation of Districts). By 1966, nine Development Districts were created to facilitate comprehensive economic planning and conduct development and administration activities for local governments. To further the mission of these Development Districts, TDEC provides solid waste technical assistance to counties and Regions (Coleman,

2005). The Development Districts assist in the compilation of data vital for preparation of the Regions' APR. Development Districts assist counties and Regions with the development and expansion of solid waste programs and facilities. Development Districts also assist with coordination and advertisement of HHW collection events, workshops, seminars, and meetings relating to solid waste initiatives.

Recycling Marketing Cooperative for Tennessee

The Recycling Marketing Cooperative for Tennessee (RMCT) is a non-profit organization established in 1993. Contracted by TDEC to assist in marketing recyclables and to fulfill the requirements set forth in TCA §68-211-826, RMCT provides assistance in program development, grant writing, and logistical planning to counties, cities, and industry (Recycling Marketing Cooperative for Tennessee, (n.d.), ¶ 1).

University of Tennessee - Center for Industrial Services

Through a contract with the University of Tennessee (UT) Center for Industrial Services (CIS), industry is provided technical assistance on waste identification and reduction. CIS maintains a web-based waste reduction information clearinghouse and provides training, workshops, and assistance related to waste managing, planning, and reduction. Two programs maintained by CIS are the Tennessee Materials Exchange (TME) and the Recycling Markets Directory (RMD).

TME promotes beneficial use of material resources, especially those considered wastes and otherwise destined for disposal. This free service assists industry in finding markets for by-products, surplus materials, and wastes. The TME lists available materials and serves as an intermediary between those who have materials and those who want them. CIS updates the TME

listing monthly on their website (University of Tennessee, Center for Industrial Services, (2005), *Tennessee Materials Exchange*, ¶ 1).

The RMD is a database of companies that purchase recyclable materials. The database is searchable by company name, by company location, or by the types of material purchased. Only companies that actively recycle materials generated in Tennessee are included in the database. Companies with expansion plans in Tennessee are not added until the in-State facilities are operational. City and county recycling collection programs are not included. The database is constantly evolving and requires routine updates (UT CIS, (2005), *Recycling Markets Directory*, ¶ 1).

University of Tennessee – County Technical Assistance Service

Through a contract with TDEC, the UT County Technical Assistance Service (CTAS) provides technical assistance to counties, municipalities, Regions, and solid waste authorities for planning and reporting. CTAS assists and advises these authorities in upgrading and maintaining solid waste collection systems, including convenience centers, transfer stations, and systems used in reduction, recycling and disposal. CTAS also develops and offers courses and workshops for solid waste management, pollution prevention, source reduction, and recycling for continuing education and training for local government officials. In addition, CTAS has developed a statewide geographic information system database of solid waste facilities (UT County Technical Assistance Service, (2005), *Reference Materials*).

Accomplishments

Diversion / Resource Recovery

General

The 1999 amendments to the Act established 1995 as the new base year for measuring solid waste reduction. Regions were required to meet the 25% solid waste reduction and diversion goal by 2003. Tennesseans generated 6,884,772 tons of solid waste in 1995, equal to 1.31 tons per person per year. In 2004, Tennesseans generated 12,839,655 tons of solid waste with 6,558,816 tons disposed of in Class I landfills and 6,280,838 tons recycled, reused, or diverted to other disposal facilities. This equates to a disposal rate of 1.11 tons per person. Using the 1995 base year, the per capita waste reduction and diversion rate for 2004 is 15%.

Regions that did not meet the December 31, 2003, solid waste reduction and diversion goal are to have their solid waste programs qualitatively assessed to determine if a “good faith” effort was made toward achieving the goal. TDEC has drafted rules outlining the methodology to be used in performing this assessment. Promulgation of these rules is scheduled for August 6, 2006.

In 1989, there were 79 publicly owned MSW landfills in Tennessee, three publicly owned incinerators, and 17 privately owned MSW landfills. Eight-two Tennessee counties possessed a sanitary landfill. In FY 04-05, there were only 36 permitted Class I (sanitary) landfills in Tennessee; 19 were publicly owned. This decline in facilities, particularly county owned facilities, can be partially attributed to Subtitle D regulations that mandated stricter requirements for the construction and operation of landfills and made smaller landfills less economically feasible. There are 72 Class III and IV (construction & demolition) landfills used by 61 counties.

Forty-four of the Class III and IV landfills are county-owned. Approximately 1,482,437 tons of material were diverted to Class III and IV landfills in 2004.

The number of recycling, collection, and processing facilities in Tennessee continues to increase. These facilities have increased from 160 in 1992 to 1,031 at the end of 2004. This number includes facilities operated by county and city governments, non-profit organizations, and businesses. Additionally, Tennessee has 862 used oil collection centers for “do-it-yourselfers” to safely dispose of their used oil.

Under the Act, the 11 counties that produced the most solid waste in 1991 are eligible for a rebate of a portion of the tipping fees collected each year (Solid Waste Management Act, Rebate, 1991). Appendix A lists the names of the eligible counties and municipalities. Over \$550,000 was distributed during FY 04-05. In some cases, eligible municipalities elected to give their portion of the rebate to their county’s solid waste efforts.

TDEC has also provides assistance with recycling equipment purchases. Appendix B and Appendix C list grants awarded during FY 04-05 for recycling and waste reduction respectively. During this fiscal year, almost \$440,000 was awarded to local municipalities and county governments to purchase equipment that will further recycling efforts. TDEC awarded over \$2.2 million to county and local waste reduction efforts.

Household Hazardous Waste

In FY 04-05, TDEC sponsored 57 HHW collection events across the State. A variety of wastes were collected at these events including batteries, corrosives, electronics, flammable liquids, mercury, oxidizers, paint, and pesticides. MSE Environmental, Inc. held the contract for

this service from June 1, 2003, through June 30, 2005. Clean Harbors Environmental Services, Inc. was awarded this contract beginning August 1, 2005, extending through July 31, 2008.

The service collected 1,403,754 lbs of household hazardous waste from 22,705 households. An average of 12 tons of HHW was collected at each event with a cost of approximately \$21,500 per event. The total cost for the 56 rural county collection events was \$1,125,638. Urban collection was limited to Shelby County, because it does not have a permanent HHW collection facility. The cost for this urban collection event was \$94,870. The total average disposal cost per pound for waste received was \$0.87, translating to an overall cost of \$81.59 per household. Appendix D shows the data for the FY 04-05 HHW Mobile Collection Service. Chattanooga, Knoxville, and Nashville have permanent HHW collection facilities constructed with the assistance of grants provided by TDEC. HHW received at these locations are not included in the above calculations.

State Park Recycling

Warriors' Path State Park is a 950-acre area in East Tennessee acquired from the Tennessee Valley Authority in 1952 (TDEC SWM HHW Program, (n.d.), ¶ 1). Warriors' Path State Park initiated a recycling program in FY 04-05 through the park's partnership with local solid waste organizations and SERP. TDEC now has recycling programs in 33 State parks.

Waste Tire Management

In FY 04-05, the Waste Tire Program (WTP) provided funds to encourage the beneficial end use of scrap tires. As a result of this program, 59,359 tons of tires were diverted from landfills to beneficial end uses in FY 04-05 at a cost of over \$4.1 million (Appendix E). There are four businesses in Tennessee that use waste tires (either chipped or whole) for tire derived

fuel: (1) TVA's Allen Steam Plant in Memphis, Shelby County, (2) Bowater Incorporated's paper mill operations in Calhoun, McMinn County, (3) CEMEX Incorporated's cement plant in Knoxville, Knox County, and (4) Gerdau Ameristeel Corporation's steel mill in Jackson, Madison County. Many of Tennessee's waste tires are processed and consumed by out-of-state end users. The primary end use of Tennessee's waste tires is as TDF.

TDEC has identified 50 unpermitted waste tire sites in 22 counties. TDEC funded cleanup activities at two sites in FY 04-05. TDEC partnered with Fayette County and their tire processor, Mac's Tire Recyclers of Saltillo, MS, to remediate a site previously operated by Capal Industries, an inactive commercial tire processor located near La Grange, Fayette County. Capal Industries, on abandoning the site, forfeited \$21,000 in financial assurance that had been required when the original operation was permitted by SWM. This \$21,000, along with \$48,301.50 from the Fund, was used to remove 418.45 tons of waste tires from the site.

TDEC also coordinated the clean up of the Butler Tire site in Johnson County. In this effort, TDEC partnered with both Washington County and Johnson County officials and their tire processor, US Tire Recycling of Concord, NC, to conduct the clean up. TDEC received additional assistance from the Tennessee Department of Correction, Northeast Correctional Complex. Prison labor was provided to help load the waste tires at the site. A total of 173.64 tons of waste tires were removed from this site. TDEC spent \$12,154.80 from the Fund to complete this clean up in FY 04-05.

TDEC initiated a waste tire stakeholders discussion group during FY 04-05 to gather further waste tire information and identify issues. Representatives from local, state, and national agencies gathered to discuss the progress of Tennessee's WTP. Six group meetings were held

between November 2004 and February 2005. As a result, TDEC initiated a review of its enforcement and abatement activities. The previous inventory and priority list of unpermitted waste tire sites (developed by SWM) was reviewed and TDEC's Environmental Field Offices began an on-going assessment of these. TDEC expects to complete the re-evaluation of these sites and will develop a priority list of unpermitted waste tire sites in FY 05-06. A new and revised inventory of unpermitted waste tire sites will be available from TDEC in FY 05-06.

Education

America Recycles

Organizations such as Keep America Beautiful, the County Agricultural Extension Services, local governments, and grass roots recycling organizations came together to support America Recycles. Through this cooperative, several America Recycles events were held throughout FY 04-05. A series of luncheons were hosted across the State training local coordinators to plan special recycling events that are successful and environmentally friendly.

Schools Chemical Cleanout Campaign

The SC3 program has produced successful results by coordinating the disposal of hazardous substances from schools with county HHW collections and the Green Schools Program. This minimizes disposal costs by bulking the school waste and coordinating with local HHW collection events. During the Fall 2004 and Spring 2005 collection events, 46 schools removed approximately 13,000 lbs of legacy chemicals. Disposal costs for the schools have been very reasonable when compared with the cost for individual disposal contracts. Participating schools pay a percentage of the disposal cost, between 10% and 50%, depending on

the county economic index. The disposal phase of the SC3 program will continue through Fall 2006.

State Employee Recycling Program

Overwhelming support continues for the SERP. In FY 04-05, State employees recycled 988 tons of paper. This generated more than \$40,248 in revenue and saved \$29,649 in disposal costs, for a total savings of \$69,897. Earth Savers is the State's contractor for paper, plastic, and aluminum.

Tennessee Great American Cleanup

TDEC hosted the 2005 Great American Cleanup Clothing Drive during two events held May 11-12 and May 18-19, 2005, at the Bicentennial Mall State Park in Nashville, Davidson County. TDEC advertised the TGAC clothing drive and included State employees in Nashville and the general public. The event helped educate the public about the benefits of clothing reuse, helping the needy, while also saving valuable landfill space. Employees from eight State offices collected to the 4,420 lbs of clothes during this event. TDEC staff also distributed packets of environmental information. Radio and print media advertised the event. Recipients of this year's donations were Community Resource Center, Goodwill Industries of Middle Tennessee, Incorporated, and Mending Hearts, Incorporated. During the event held during May 18-19, Goodwill also accepted other items such as furniture, toys, books, and some electronic products.

Tennessee Solid Waste Education Project (TN-SWEP)

TN-SWEP is a project funded through the Fund designed to help Tennessee students, teachers and local officials understand issues about managing and recycling solid waste. TN-SWEP staff made 297 classroom presentations, seven in-service training sessions, and five

curriculum workshops for teachers and other solid waste educators. Staff attended 85 meetings with county solid waste managers, Keep Tennessee Beautiful coordinators, school principals and administrators, and city and county recycling coordinators. The meetings brought county recycling coordinators and teachers together to develop and expand school recycling and/or composting programs. TN-SWEP staff provided curriculum sessions at the annual Tennessee Science Teachers Association and the Tennessee Environmental Education Association conferences, and worked with pre-service teachers at Middle Tennessee State University, Union University, Tusculum College, and UT Martin.

Technical Assistance

Recycling Marketing Cooperative of Tennessee (RMCT)

RMCT seeks the most cost-effective markets for recyclables and combines materials from small recycling programs and of larger programs to minimize transportation costs and maximize recycling prices. During FY 04-05, RMCT helped local solid waste programs market more than 8,595 tons of recyclable materials and helped collect over \$659,184 for those programs. By diverting recyclable materials from the waste stream and eliminating landfill costs, RMCT's efforts helped local solid waste programs save over \$257,850.

During FY 04-05, RMCT also provided assistance to 68 counties and eight cities across Tennessee in marketing materials. RMCT helped set up recycling programs, write grants, and/or researched recycling information, marketing and systems. RMCT is helping Chickasaw State Park start a recycling program in cooperation with Chester and Hardeman Counties. Through this effort, Chickasaw State Park will join 33 other State parks that fully participate in recycling efforts.

University of Tennessee - Center for Industrial Services (CIS)

CIS is contracted by TDEC to provide technical assistance to industries and small business to assist them with waste reduction and recycling efforts.

In April 2005, CIS and SWM presented a social marketing workshop entitled: *Changing Behavior When There Is No Crisis: The Daily Challenge of Solid Waste and Other Environmental Professionals*. The workshop was developed and presented by Dr. P. Wesley Schultz, associate professor of psychology at the California State University at San Marcos. From this program, approximately 100 participants from various federal and state agencies, including Canada, EPA, Georgia, Kentucky, South Carolina, and Tennessee, were presented the benefits of social marketing to local solid waste management programs.

During FY 04-05, trials were completed that evaluated the use of gypsum and wood waste as a soil amendment. The project studied the effects of sawdust and nitrogen treatments on the growth and yield of corn and sweet potatoes. The goal of this study is to develop a beneficial soil amendment using these wastes for agriculture. Dr. Paul Denton, UT Agricultural Extension Office, will prepare a guidance document prescribing gypsum and wood waste application rates based on soil types and crops, detailing the benefits of this added organic matter to soil to Tennessee farmers.

University of Tennessee – County Technical Assistance Service (CTAS)

CTAS is contracted by TDEC to provide technical assistance to counties, municipalities, Regions and solid waste authorities for planning and reporting. CTAS assists and advises local governments and solid waste regions and authorities in upgrading and maintaining solid waste

collection systems, including convenience centers, transfer stations, and systems used in reduction, recycling and disposal.

During FY 04-05, CTAS completed 637 contacts with counties, municipalities, solid waste authorities and Regions providing technical assistance. This included technical assistance on the management of solid waste programs and how to survey solid waste composition. CTAS continues to provide local government with sample ordinances, procedural handbooks, and contracts to assist them in properly incorporating solid waste activities into their local laws and community operations. CTAS also maintains and updates a database to capture information referenced in the APRs. Among other uses, this database enables the TDEC to analyze each Region's effort in meeting reduction and diversion goals.

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Appendix A

Recycling Rebate Awards – FY 04-05

| Rebate Recipient | Amount |
|------------------------------------|--------------------|
| Davidson County / Nashville | \$82,555.00 |
| Belle Meade | \$438.00 |
| Berry Hill | \$00 |
| Forest Hills | \$00 |
| Goodlettsville | \$00 |
| Lakewood | \$00 |
| Oak Hill | \$00 |
| Ridgetop | \$00 |
| Hamilton County | \$36,894.00 |
| Chattanooga | \$00 |
| Collegedale | \$00 |
| East Ridge | \$00 |
| Lakesite | \$00 |
| Lookout Mountain | \$00 |
| Red Bank | \$00 |
| Ridgeside | \$00 |
| Signal Mountain | \$887.00 |
| Soddy Daisy | \$00 |
| Walden | \$00 |
| Knox County | \$53,097.00 |
| Farragut | \$00 |
| Knoxville | \$41,874.00 |
| Madison County | \$19,172.00 |
| Jackson | \$35,759.00 |
| Medon | \$00 |
| Maury County | \$00 |
| Columbia | \$00 |
| Mt. Pleasant | \$00 |
| Spring Hill | \$00 |
| Montgomery County | \$15,348.00 |
| Clarksville | \$00 |

| Rebate Recipient | Amount |
|---------------------------|---------------------|
| Rutherford County | \$21,926.00 |
| Eagleville | \$00 |
| Lavergne | \$00 |
| Murfreesboro | \$13,779.00 |
| Smyrna | \$00 |
| Shelby County | \$29,628.00 |
| Arlington | \$00 |
| Bartlett | \$9,300.00 |
| Collierville | \$7,803.00 |
| Germantown | \$1,092.62 |
| Lakeland | \$1,587.00 |
| Memphis | \$142,209.00 |
| Millington | \$00 |
| Sullivan County | \$12,288.00 |
| Bluff City | \$00 |
| Bristol | \$3,669.00 |
| Johnson City | \$00 |
| Kingsport | \$6,486.00 |
| Sumner County | \$00 |
| Gallatin | \$00 |
| Hendersonville | \$00 |
| Millersville | \$971.00 |
| Mitchellville | \$00 |
| Portland | \$00 |
| Westmoreland | \$00 |
| White House | \$00 |
| Williamson County | \$18,325.75 |
| Brentwood | \$00 |
| Fairview | \$00 |
| Franklin | \$00 |
| Thompson's Station | \$00 |
| Total Rebate Funds | \$553,501.00 |

Appendix B

Recycling Equipment Grant Awards – FY 04-05

| Grantee | Amount | Equipment |
|----------------------------------|---------------------|---|
| Campbell County | \$16,076.00 | Containers |
| Carroll County | \$17,040.00 | 7 trailers |
| Claiborne County | \$24,798.40 | 3 roll-off containers |
| Clay County | \$25,000.00 | Vertical baler |
| Cookeville, City of | \$5,000.00 | Containers |
| Fentress County | \$20,692.80 | Containers |
| Goodwill Industries | \$8,439.87 | Portable buildings, containers |
| Grundy County | \$21,095.31 | Containers |
| Hardeman County | \$15,540.00 | 13 trailers, 15 containers |
| Henderson County | \$12,726.40 | Baler, 7 trailers |
| Henry County | \$22,360.10 | Shredder |
| Jefferson County | \$17,596.22 | Trailer, used oil collection containers |
| Johnson County | \$21,621.60 | Brush chipper |
| Jonesborough, Town of | \$25,000.00 | Food waste containers, compost mixer |
| Lawrence County | \$14,985.00 | Scale, shredder, baler |
| Macon County | \$17,816.00 | Containers, receptacles |
| Marshall County | \$16,446.00 | Brush chipper |
| Oneida, Town of | \$22,085.10 | Brush chipper |
| Putnam County | \$6,938.00 | Compactor, receiver box |
| Sevier County | \$13,175.50 | Containers |
| Union County | \$20,250.00 | Shredder, containers, bins |
| Warren County | \$25,000.00 | Receiver boxes, truck tarps |
| Wayne County | \$24,930.00 | Forklift |
| Wilson County | \$25,000.00 | Roll-off truck |
| Total Recycling Equipment | \$439,612.30 | |

Appendix C

Waste Reduction Grant Awards – FY 04-05

| Grantee | Grant Amount | Project |
|-------------------|-----------------------|---|
| Bartlett | \$80,506.00 | 4,000 waste carts, education |
| Campbell County | \$96,000.00 | Roll-off Truck |
| Chester County | \$179,190.00 | Building, densifier, containers, computer, concrete pad, paving |
| Cocke County | \$168,000.00 | Dozer |
| Collierville | \$75,000.00 | Recycling truck |
| Fentress County | \$200,000.00 | Building, site preparation, concrete, paving, electrical |
| Greeneville | \$200,000.00 | Metal building, loading dock |
| Hawkins County | \$36,000.00 | Addition to MRF, material, site prep. |
| Hardin County | \$52,880.00 | Improvements and upgrade to facility, paint collection |
| Henry County | \$164,500.00 | Bulldozer |
| Jefferson County | \$200,000.00 | Tub grinder |
| Lewis County | \$97,389.00 | Diesel tank site, wheel crusher, concrete pad |
| Millersville | \$36,150.00 | Paving, education |
| Murfreesboro | \$200,000.00 | Tub grinder |
| Obion County | \$190,500.00 | Building, fencing, skid steer loader, scale, baler, truck |
| Roane County | \$100,000.00 | Roll-off truck, containers, skid steer loader |
| Sullivan County | \$157,090.00 | 2 front end/rear end loading trucks, 100 totes, 34 containers |
| Washington County | \$40,750.00 | 2 additions to MRF building, skid steer loader, containers |
| TOTAL | \$2,273,955.00 | |

Appendix D

Household Hazardous Waste Mobile Collection Service Data – FY 04-05

| County | Participating Households | Participation Rate | Total Cost | Total Pounds | Cost per Household |
|------------|--------------------------|--------------------|-------------|--------------|--------------------|
| Anderson | 557 | 1.93% | \$30,411.78 | 35,053 | \$54.60 |
| Bedford | 364 | 2.21% | \$18,511.24 | 19,636 | \$50.86 |
| Blount | 1211 | 2.66% | \$51,270.92 | 70,729 | \$42.34 |
| Blount | 850 | 1.87% | \$41,839.74 | 60,029 | \$49.22 |
| Bradley | 350 | 0.96% | \$22,735.97 | 28,664 | \$64.96 |
| Cannon | 96 | 1.80% | \$8,166.06 | 8,862 | \$85.06 |
| Carroll | 54 | 0.46% | \$6,652.92 | 4,459 | \$123.20 |
| Carter | 235 | 1.00% | \$14,149.21 | 15,749 | \$60.21 |
| Cheatham | 191 | 1.26% | \$15,474.39 | 14,350 | \$81.02 |
| Coffee | 283 | 1.41% | \$18,147.80 | 17,693 | \$64.13 |
| Cumberland | 506 | 2.53% | \$19,629.05 | 20,243 | \$38.79 |
| Dekalb | 51 | 0.70% | \$6,028.08 | 3,147 | \$118.20 |
| Dickson | 330 | 1.82% | \$18,147.85 | 20,619 | \$54.99 |
| Fentress | 142 | 2.09% | \$8,043.28 | 4,300 | \$56.64 |
| Franklin | 225 | 1.38% | \$13,397.01 | 10,364 | \$59.54 |
| Gibson | 65 | 0.34% | \$7,336.89 | 4,827 | \$112.88 |
| Giles | 277 | 2.37% | \$17,165.27 | 19,708 | \$61.97 |
| Greene | 368 | 1.42% | \$23,215.98 | 24,001 | \$63.09 |
| Hamblen | 225 | 0.95% | \$11,333.69 | 10,922 | \$50.37 |
| Hawkins | 40 | 0.18% | \$5,346.89 | 1,880 | \$133.67 |
| Haywood | 18 | 0.23% | \$6,849.65 | 5,325 | \$380.54 |
| Henderson | 130 | 1.24% | \$10,684.94 | 8,260 | \$82.19 |
| Henry | 256 | 2.03% | \$15,626.47 | 12,057 | \$61.04 |
| Humphreys | 141 | 1.94% | \$9,435.06 | 7,686 | \$66.92 |
| Jefferson | 76 | 0.40% | \$9,894.57 | 8,213 | \$130.19 |
| Johnson | 56 | 0.78% | \$8,495.65 | 4,559 | \$151.71 |
| Lincoln | 175 | 1.36% | \$11,472.34 | 10,812 | \$65.56 |
| Loudon | 160 | 0.95% | \$12,868.62 | 11,677 | \$80.43 |
| Madison | 451 | 1.19% | \$21,496.36 | 26,135 | \$47.66 |
| Marion | 54 | 0.49% | \$6,209.08 | 3,128 | \$114.98 |
| Marshall | 253 | 2.26% | \$13,397.02 | 13,459 | \$52.95 |
| Marshall | 275 | 2.46% | \$16,498.27 | 16,935 | \$59.99 |
| Maury | 609 | 2.04% | \$31,774.15 | 40,770 | \$52.17 |

| County | Participating Households | Participation Rate | Total Cost | Total Pounds | Cost per Household |
|------------------------|--------------------------|--------------------|-----------------------|------------------|--------------------|
| McMinn | 178 | 0.87% | \$11,620.90 | 10,020 | \$65.29 |
| Monroe | 224 | 1.33% | \$13,650.08 | 11,295 | \$60.94 |
| Montgomery | 1011 | 1.78% | \$38,782.97 | 39,281 | \$38.36 |
| Montgomery | 827 | 1.45% | \$35,973.87 | 40,998 | \$43.50 |
| Pickett | 41 | 2.10% | \$8,204.44 | 5,369 | \$200.11 |
| Putnam | 508 | 1.93% | \$27,245.30 | 30,716 | \$53.63 |
| Roane | 308 | 1.46% | \$21,218.14 | 20,761 | \$68.89 |
| Rutherford | 818 | 0.97% | \$39,518.28 | 53,116 | \$48.31 |
| Rutherford | 933 | 1.11% | \$42,604.90 | 61,154 | \$45.66 |
| Scott | 30 | 0.34% | \$5,642.19 | 1,800 | \$188.07 |
| Sevier | 297 | 0.96% | \$16,728.45 | 17,470 | \$56.32 |
| Sullivan | 823 | 1.35% | \$44,278.55 | 61,625 | \$53.80 |
| Sumner | 425 | 0.75% | \$30,195.70 | 42,686 | \$71.05 |
| Trousdale | 26 | 0.87% | \$5,027.89 | 1,342 | \$193.38 |
| Unicoi | 96 | 1.36% | \$8,748.48 | 6,515 | \$91.13 |
| Union | 44 | 0.58% | \$5,281.15 | 2,118 | \$120.03 |
| Warren | 369 | 2.33% | \$14,837.32 | 13,686 | \$40.21 |
| Washington | 504 | 1.14% | \$29,977.01 | 31,065 | \$59.48 |
| Wayne | 74 | 1.10% | \$6,110.41 | 2,132 | \$82.57 |
| Weakley | 68 | 0.50% | \$7,870.66 | 4,856 | \$115.75 |
| Williamson | 1839 | 3.13% | \$71,026.72 | 97,848 | \$38.62 |
| Williamson | 1456 | 2.48% | \$62,405.05 | 87,268 | \$42.86 |
| Wilson | 1132 | 2.89% | \$46,983.46 | 57,406 | \$41.50 |
| Totals/Averages | 21,105 | 1.42% | \$1,125,638.12 | 1,264,778 | \$81.99 |
| | | | | | |
| Urban Areas | | | | | |
| Shelby | 1600 | 0.44% | \$94,870.47 | 138,976 | \$59.29 |
| | | | | | |
| Statewide | | | | | |
| Totals/Averages | 22,705 | 1.40% | \$1,220,508.59 | 1,403,754 | \$81.59 |

Appendix E

Waste Tire Program Awards – FY 04-05

| Grantee | Total Expenditures | Tires (actual tons) | | Grantee | Total Expenditures | Tires (actual tons) |
|-------------------|---------------------------|----------------------------|--|------------------|---------------------------|----------------------------|
| Anderson County | \$51,440.20 | 734.86 | | Fentress County | \$12,945.80 | 184.94 |
| Bedford County | \$30769.90 | 439.57 | | Franklin County | \$30,074.10 | 429.63 |
| Benton County | \$6,326.60 | 90.38 | | Gibson County | \$36,631.70 | 523.31 |
| Bledsoe County | \$5,903.10 | 84.33 | | Giles County | \$22,232.00 | 317.60 |
| Blount County | \$69,742.40 | 996.32 | | Grainger County | \$8,375.50 | 119.65 |
| Bradley County | \$61,875.80 | 883.94 | | Greene County | Hub Partner | 0 |
| Campbell County | \$24,430.00 | 349.00 | | Grundy County | \$00 | 0.00 |
| Cannon County | \$7,463.40 | 106.62 | | Hamblen County | \$42,371.00 | 605.30 |
| Carroll County | \$20,029.80 | 286.14 | | Hamilton County | \$285,355.70 | 4,076.51 |
| Carter County | Hub Partner | 0 | | Hancock County | \$3,082.10 | 44.03 |
| Cheatham County | \$17,018.40 | 243.12 | | Hardeman County | \$9,506.00 | 135.80 |
| Chester County | \$8,189.30 | 116.99 | | Hardin County | \$30,284.10 | 432.63 |
| Claiborne County | \$10,094.00 | 144.20 | | Hawkins County | \$19,925.50 | 284.65 |
| Clay County | \$00 | .00 | | Haywood County | \$11,102.00 | 158.60 |
| Cocke County | \$21,895.30 | 312.79 | | Henderson County | \$19,427.80 | 277.54 |
| Coffee County | \$37,947.70 | 542.11 | | Henry County | \$30,432.50 | 434.75 |
| Crockett County | \$5,019.00 | 71.70 | | Hickman County | \$12,284.30 | 175.49 |
| Cumberland County | \$37,754.50 | 539.35 | | Houston County | \$6,181.00 | 88.30 |
| Davidson County | \$531,019.30 | 7,585.99 | | Humphreys County | \$11,522.00 | 164.60 |
| Decatur County | \$4,784.50 | 68.35 | | Jackson County | \$5,305.30 | 75.79 |
| DeKalb County | \$11,419.10 | 163.13 | | Jefferson County | \$4,130.70 | 59.01 |
| Dickson County | \$31,559.50 | 450.85 | | Johnson County | Hub Partner | 0 |
| Dyer County | \$21,515.90 | 307.37 | | Knox County | \$520,405.90 | 7,434.37 |
| Fayette County | \$44,734.90 | 639.07 | | Lake County | \$00 | 0.00 |

| Grantee | Total Expenditures | Tires (actual tons) | | Grantee | Total Expenditures | Tires (actual tons) |
|-------------------|--------------------|---------------------|--|-------------------|-----------------------|---------------------|
| Lauderdale County | \$10,422.30 | 148.89 | | Roane County | \$35,041.30 | 500.59 |
| Lawrence County | \$5,072.20 | 72.46 | | Robertson County | \$31,812.20 | 454.46 |
| Lewis County | \$8,743.70 | 124.91 | | Rutherford County | \$121,864.90 | 1,740.67 |
| Lincoln County | \$30,323.30 | 433.19 | | Scott County | \$6,612.20 | 94.46 |
| Loudon County | \$16,404.50 | 234.35 | | Sequatchie County | \$11,403.70 | 162.91 |
| McMinn County | \$25,980.50 | 371.15 | | Sevier County | \$53,162.20 | 759.46 |
| McNairy County | \$14,570.50 | 208.15 | | City of Memphis | \$543,162.20 | 7,759.47 |
| Macon County | \$12,277.30 | 175.39 | | Smith County | \$10,006.50 | 142.95 |
| Madison County | \$119,999.60 | 1714.28 | | Stewart County | Hub Partner | 0 |
| Marion County | \$15,381.10 | 219.73 | | Sullivan County | Hub Partner | 0 |
| Marshall County | \$21,049.70 | 300.71 | | Sumner County | \$68,186.30 | 974.09 |
| Maury County | \$53,830.00 | 769.00 | | Tipton County | \$32,942.70 | 470.61 |
| Meigs County | \$2,494.80 | 35.64 | | Trousdale County | \$3,332.70 | 47.61 |
| Monroe County | \$29,241.80 | 417.74 | | Unicoi County | Hub Partner | 0 |
| Montgomery County | \$104,029.80 | 1,486.14 | | Union County | \$8,551.20 | 122.16 |
| Moore County | \$695.80 | 9.94 | | Van Buren County | \$0 | 0 |
| Morgan County | \$9,338.00 | 133.40 | | Warren County | \$29,911.00 | 427.30 |
| Obion County | \$12,313.70 | 175.91 | | Washington County | \$264,153.40 | 3,773.62 |
| Overton County | \$15,403.50 | 220.05 | | Wayne County | \$0 | 0 |
| Perry County | \$3,497.90 | 49.97 | | Weakley County | \$17,149.30 | 244.99 |
| Pickett County | \$3,504.90 | 50.07 | | White County | \$18,027.80 | 257.54 |
| Polk County | \$11,549.30 | 164.99 | | Williamson County | \$103,407.50 | 1,477.25 |
| Putnam County | \$33,272.40 | 475.32 | | Wilson County | \$39,711.70 | 567.31 |
| Rhea County | \$14,786.80 | 211.24 | | TOTAL | \$4,155,112.50 | 59,358.75 |

Appendix F

Municipal Solid Waste Advisory Committee – FY 04-05

| Member | Representing | Date Appointed | Term Expiration |
|---|------------------------------------|----------------|-----------------|
| Lewis Bumpus, Chairman Williamson County Solid Waste | Tennessee Environmental Council | 1/1/05 | 12/31/08 |
| J. H. Graham, III Mayor, City of Crossville | Municipalities | 1/1/04 | 12/31/07 |
| Ted Fox, III Director, Shelby County Public Works | Public – West Tennessee | 1/1/05 | 12/31/08 |
| Alan Knowles, Superintendent Hamilton County Support Services | Urban Counties | 1/1/05 | 12/31/08 |
| Vacant | Environmental Interests | | |
| Bob M. Whetsel Director, Knoxville Public Works | Urban Municipalities | 1/1/05 | 12/31/08 |
| Karen Birkenstock-Wooten Executive Vice President, 5R Processors | Recycling Industry | 1/1/04 | 12/31/07 |
| Don Hyman Business Owner | Tire Industry | 1/1/05 | 12/31/08 |
| John S. Waddle, Jr. Farmer; Greene County Commissioner | Public – East Tennessee | 1/1/05 | 12/31/08 |
| David L. Hollinshead BFI, Middlepoint Landfill | Waste Management Industry | 1/1/04 | 12/31/07 |
| Diane Scher Bridgestone-Firestone | Business Interests | 1/1/04 | 12/31/07 |
| Susan Reid, Director First TN Development District | Development Districts | 1/1/05 | 12/31/08 |
| Stefan Maupin Tennessee Farm Bureau | Agriculture | 1/1/05 | 12/31/08 |
| Geneil Dillehay Environmental Consultant | Public – Middle Tennessee | 1/1/04 | 12/31/07 |
| Terry Wallace Marshall County Mayor | County Governments | 1/1/05 | 12/31/08 |

Ex Officio

Mary Taylor
Jack Barkenbus, Ph.D.
Chuck Head

University of Tennessee Institute for Public Service
University of Tennessee Waste Management Institute
Department of Environment and Conservation

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